

Male Prairie Warbler dies during courtship.—Natural deaths of birds are infrequently observed and less frequently recorded. On 4 April 1973, I watched the death of a male Prairie Warbler (*Dendroica discolor*) engaged in courtship, and I believe the circumstances warrant the conclusion that death was caused by sexual excitement.

The unbanded male was seen at 0815, perched at a height of 10 m and singing at a rate typical of males in early spring (see Nolan 1977, *Ornithol. Monogr.*, in press; all interpretations of behavior are based on his extensive description). As the male sang, I became aware of an unbanded female Prairie Warbler that was foraging, changing perches frequently, and ascending the tree occupied by the male. Soon (1.5 min) after I noticed the female, the male began to sing muted songs, suggesting he was aware of her proximity. A sexual chase followed immediately, during which harsh call notes were heard. Female approach combined with harsh calls and sexual chase occur most frequently early in courtship, typically on the first day of association (of 138 sexual chases Nolan reported during the first 3 days of association between birds that eventually paired, 73% occurred on day one). One to two minutes after the first sexual chase, I heard the male singing some 30 m distant. I approached him and began to tape-record my observations of his behavior. The female (or another one) soon appeared, and 1.5 min thereafter a second sexual chase ensued. At the end of the chase, the male was approximately 6 m from me, on a perch 1–1.5 m high. He had not overtaken the female and pulled her tail, as males often do. His appearance was indistinguishable from that described by Nolan as typical of males after a sexual chase, "After at least half the chases in which the female was caught and almost all in which she was not, the male perched like a bird that had just concluded a fight, tensely crouching, wings out (rarely drooped), gaping wide with head forward and probably at times with retracted neck. The pose was maintained for as long as 90 sec, during which the female if in sight was watched" (Nolan, loc. cit., Chap. 10). Nolan states that the last step in resuming a normal, nonagonistic posture is closing the bill. "One male, without moving his feet toppled backwards and hung 1 sec upside down while waving his wings, then flew away." In the case I saw, the episode ended differently. Upon landing the male continued to gape as he sang (15 sec after landing, times determined from recorded tape). Still gaping he listed to one side (23 sec), hung upside down from his perch (28 sec), and fell to the ground (44 sec). I approached and found him belly down on the ground, wings spread, now gasping. I picked him up; he was dead (65 sec).

No autopsy was performed, but based on my 3 years of work with Prairie Warblers, the bird initially appeared normal and healthy and showed no apparent external wounds after death. Dilger and Walkinshaw have reported deaths from heart attack in somewhat similar situations: A Cardinal (*Cardinalis cardinalis*) died of an apparent heart attack after prolonged territorial fighting (Dilger, 1955, *Auk* 72: 85); a Field Sparrow (*Spizella pusilla*) died after capture, and its death was attributed to fright (Walkinshaw, 1945, *Auk* 62: 41); and many banders have reported seemingly unharmed birds that gasped and expired during handling. Dr. Jacob Fine of the Harvard Medical School has suggested (pers. commun.) that some deaths of this sort may be due to stress rather than rupture of the heart or some blood vessel. Stress engendered by aggressiveness or fear may lead to overproduction of norepinephrine, which in turn may increase membrane permeability in the digestive tract and permit passage of endotoxins normally present in the gut.

Deaths like the one described here, whether caused by heart attack, stress, or some unnamed factor, are probably not frequent; but then neither are they likely to be observed and may therefore often go unnoticed. I gratefully acknowledge the assistance of V. Nolan, Jr. and H. C. Mueller.—ELLEN D. KETTERSON, *Department of Biological Sciences, Bowling Green State University, Bowling Green, Ohio 43403*. Accepted 5 Nov. 76. (This paper was subsidized by Bowling Green State University.)

Implications of recaptures of Broad-tailed Hummingbirds banded in Colorado.—During the summers of 1972 and 1973, we mist-netted and banded 92 Broad-tailed Hummingbirds (*Selasphorus platycercus*) at the Rocky Mountain Biological Laboratory, elevation 2900 m, in the Elk Mountains of western Colorado. In 1972 we captured 31 males, 33 females, and 3 unsexed juveniles; and in 1973 15 males and 10 females. All captured birds were thought to belong to a breeding population that nests between early June and August around RMBL (Calder 1973, Waser 1976). Recapture of a fraction of these birds in summers following their banding now leads us to speculate on their minimum life-span, and also to suggest that site specificity to breeding grounds may be important in this population.

Of the 92 banded Broad-tails, 10 or 10.9%, were recaptured at least one summer after initial banding (Fig. 1). This represents a mean per-summer recapture rate of 3.2% of all birds banded in previous years. The corresponding rate for birds banded and then recaptured within any single summer averaged 6.6%.